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EXPLANATION

- 1 **Floodplain along major streams, fines**
Mainly sand and silt. Elevation generally <10 ft above modern stream level.
 - 2 **Floodplain along tributary streams, fines**
Mainly sand and silt with some larger clasts. Elevation generally <10 ft above modern stream level.
 - 21 **Floodplain along tributary, gravels**
Abundant pebbles, cobbles, and/or boulders. Elevation generally <10 ft above modern stream level.
 - 4 **Low terrace along major streams, fines**
Mainly sand and silt with some larger clasts. Elevation generally 10-30 ft above modern stream level.
 - 41 **Low terrace along tributary, fines**
Mainly sand and silt and some larger clasts. Elevation generally 10-30 ft above modern stream level.
 - 42 **Low terrace along tributary, gravels**
Abundant pebbles, cobbles, and/or boulders. Elevation generally 10-30 ft above modern stream level.
 - 3 **High terrace along major streams, fines**
Mainly sand and silt with some larger clasts. Elevation generally 30-70 ft above modern stream level.
 - 3A **High terrace along major streams, gravels**
Fan debris on steep erosional slopes that has been reworked and moved downslope by colluviation, to include creep, windthrow, minor sliding, and sheet wash.
 - 6 **Rock outcrop - soil complex**
Soil thin and patchy with common rock outcrops.
 - 7 **Mountain slope colluvium**
Bouldery colluvium on very steep slopes
 - 8 **Footslope colluvium**
Colluvium located between fan heads and steep mountain slopes
 - 9 **Colluviated fan debris on steep slopes**
Fan debris on steep erosional slopes that has been reworked and moved downslope by colluviation, to include creep, windthrow, minor sliding, and sheet wash.
 - 10 **Residuum over shale**
Shale bedrock is only a few feet below surface.
 - 11 **Residuum over limestone**
Underlain by thick red clay (i.e., typical limestone residuum).
 - 12 **Residuum undifferentiated**
May be underlain by shale and/or carbonate or other bedrock.
 - 13 **Blue Ridge fan, young or undifferentiated age**
Pebbles, cobbles, and/or boulders are common.
 - 131 **Small, probably Holocene fan**
Built at the mouths of streams incising the large older fans.
 - 14 **Blue Ridge fan, old**
Surfaces of these fans are relatively flat, generally incised, and excavation reveals weathered material in the upper 10 ft or so. They are abandoned surfaces, no longer subject to deposition.
 - 15 **Water bodies**
 - 66 **Sand deposits**
Contains few if any clasts. Occurs on some fan surfaces; origin unknown.
 - 5 **Scattered stream gravels over residual soil**

 **Y** Locations where rounded clasts exist on residuum.

 **N** Locations where rounded clasts do not exist on residuum.

① Field Trip Stops

- ◆ Abundant
- ◆ Common *Clasts can be located without a search.*
- ◆ Scattered *A search is required to locate clasts.*
- ◆ None

This preliminary 1:24,000-scale surficial geologic map of Grottoes, Virginia 7.5-minute quadrangle is based on USDA digital soil map data combined with field mapping. This map was created to determine whether or not it was possible to create a useful 1:24,000-scale surficial geologic map within a few weeks using USDA digital soil map data.

Source Material

U.S. Department of Agriculture, Natural Resources Conservation Service, 20021028, Soil Survey Geographic (SSURGO) database for Augusta County, Virginia: U.S. Department of Agriculture, Natural Resources Conservation Service, Fort Worth, Texas.

U.S. Department of Agriculture, Natural Resources Conservation Service, 20021230, Soil Survey Geographic (SSURGO) database for Rockingham County, Virginia; U.S. Department of Agriculture, Natural Resources Conservation Service, Fort Worth, Texas.

U.S. Department of Agriculture, Soil Conservation Service, 1982, Soil Survey of Rockingham County, Virginia; U.S. Government Printing Office, Washington, D.C.

U.S. Department of Agriculture, Soil Conservation Service, 1979, Soil Survey of Augusta County, Virginia; U.S. Government Printing Office, Washington, D.C..

U.S. Geologic Survey, Digital Raster Graphic of the 1987 Grottoes Virginia 7.5-minute quadrangle.
Virginia Geographic Information Network, 2003, Virginia Base Map Project, Scans of raw 2002
aerial photographs.

This map was prepared in cooperation with the
U.S. Geological Survey under the National Cooperative
Geologic Mapping Program - STATEMAP component.

Map Projection:
NAD_1983_UTM_Zone_17N
Transverse_Mercator
False_Easting: 500000.000000
False_Northing: 0.000000
Central_Meridian: -78.750000
Scale_Factor: 0.999600
Latitude_Of_Origin: 0.000000

Base map is a modified U.S. Geological Survey DRG
Grottoes Quadrangle, Virginia 1964 (photo revised 1984)
7.5-minute NAD27 series (1:24,000)

The soils map data from which this map is derived are based on the NAD83 quadrangle. The area on the ground covered by the NAD83 quadrangle is slightly different from that covered by the NAD27 quadrangle.

GROTTOES, VA.
38078-C7-TF-024
1964
PHOTOREVISED 1987
DMA 3260 IV SE SERIES V834